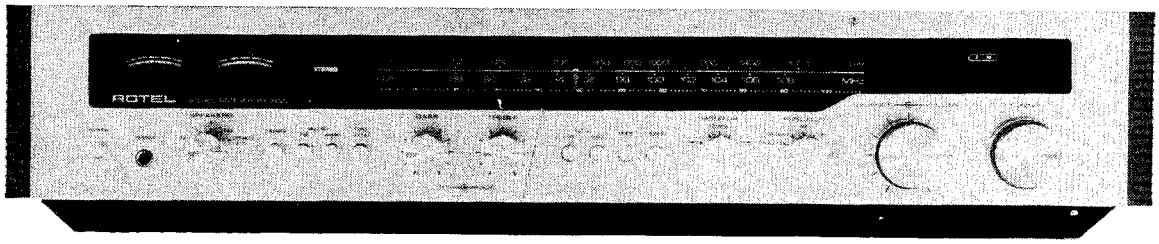
ROTEL

RX-802

AM/FM STEREO RECEIVER



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TECHNICAL MANUAL

PRECAUTIONS

1. Always disconnect the chassis from power line when soldering. Turning the power switch OFF is not enough. Power line leakage passing through the heating element may destroy the transistors and IC's.
2. Never attempt to do any work on the transistor amplifiers without first disconnecting the AC line cord and waiting until the power supply filter capacitors have discharged.
3. Replacement for output and driver transistors, if necessary, must be made from the same beta group as the original type.
4. If one output transistor burns out (open or short), always remove all output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohm-meter before inserting a new transistor. All transistors in one channel will be destroyed if the base biasing circuit is open on the emitter end.
5. When mounting a replacement power transistor, be sure the bottom of the flange, the mica insulators and the surface of the heat sink are free of foreign matter, for they may cause transistors failure.
6. Silicon grease must be applied between the mica insulator and the heat sink for better heat conduction.

POWER AMPLIFIER BIAS ADJUSTMENT

Instrument: DC milli-volt meter.

- Set volume control to minimum position.
- Turn potentiometers VR601 and VR602 (on main amp. pcb) counterclockwise before starting this procedure.

1. Connect the plus lead of a DC milli-volt meter to pin TP (L-ch.) and minus lead to pin 15 (on main amp. pcb).
2. Adjust the potentiometer VR601 to obtain a 30mV reading on the DC milli-volt meter. See figure 1.
3. Repeat the above steps 1 and 2 for Right channel. Use pin TP (R-ch.), pin 16 and potentiometer VR602.

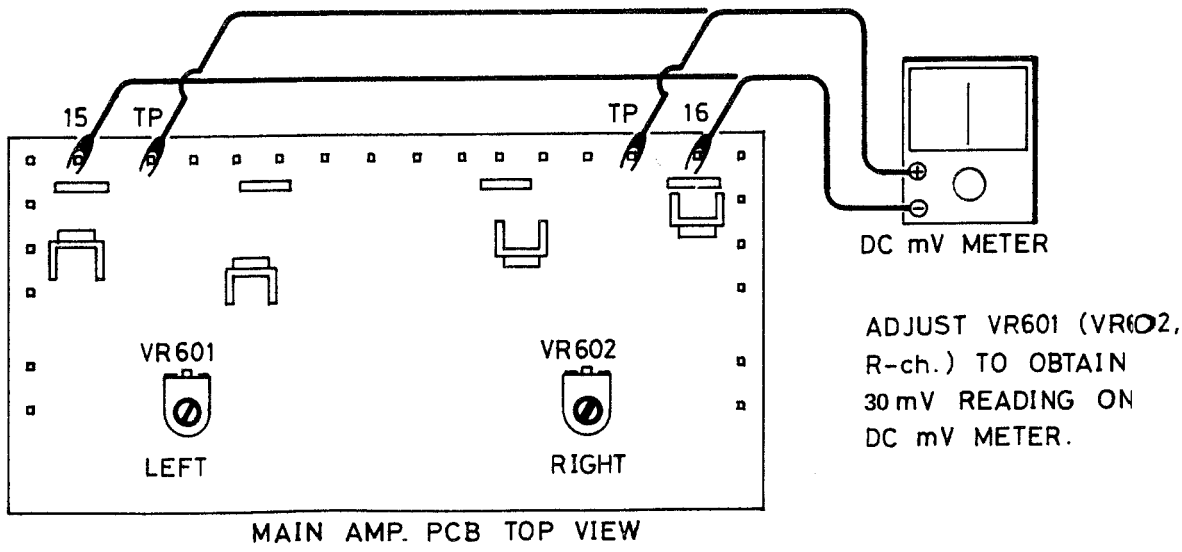


Figure 1. Bias (Idling Current) Adjustment Hook-up

AM ALIGNMENT PROCEDURE

Instruments: AM Signal Generator and AC VTVM.

NOTES: Set Function switch to AM and Monitor switch to SOURCE.
Input signal must be kept as low as possible to avoid AVC action.

Step	Generator		Turning Dial Setting	Output Indicator Connected to	Adjust	Adjust for
	Coupling	Frequency				
1	Pin No. 3 (on AM IF board) through a 0.01 mfd capacitor.	455 KHz (400 Hz 30% Mod.)	Non interference at low end of scale.	AC VTVM to MONITOR-2 "OUT" (Left or Right) jack	L206 and L205 (on AM IF board)	Maximum reading on VTVM.
2	Connect to short loop of wire. Radiate signal into ferrite loopstick antenna.	600 KHz (400 Hz 30% Mod.)	600 KHz		L204(OSC) L202(RF) (on AM IF board) and L003 (ANT)	
3		1400 KHz (400 Hz 30% Mod.)	1400 KHz		CT7(OSC) CT6(RF) and CT5(ANT) (on Front-end)	
4	Repeat steps 2 and 3 until no further improvement is noticed.					

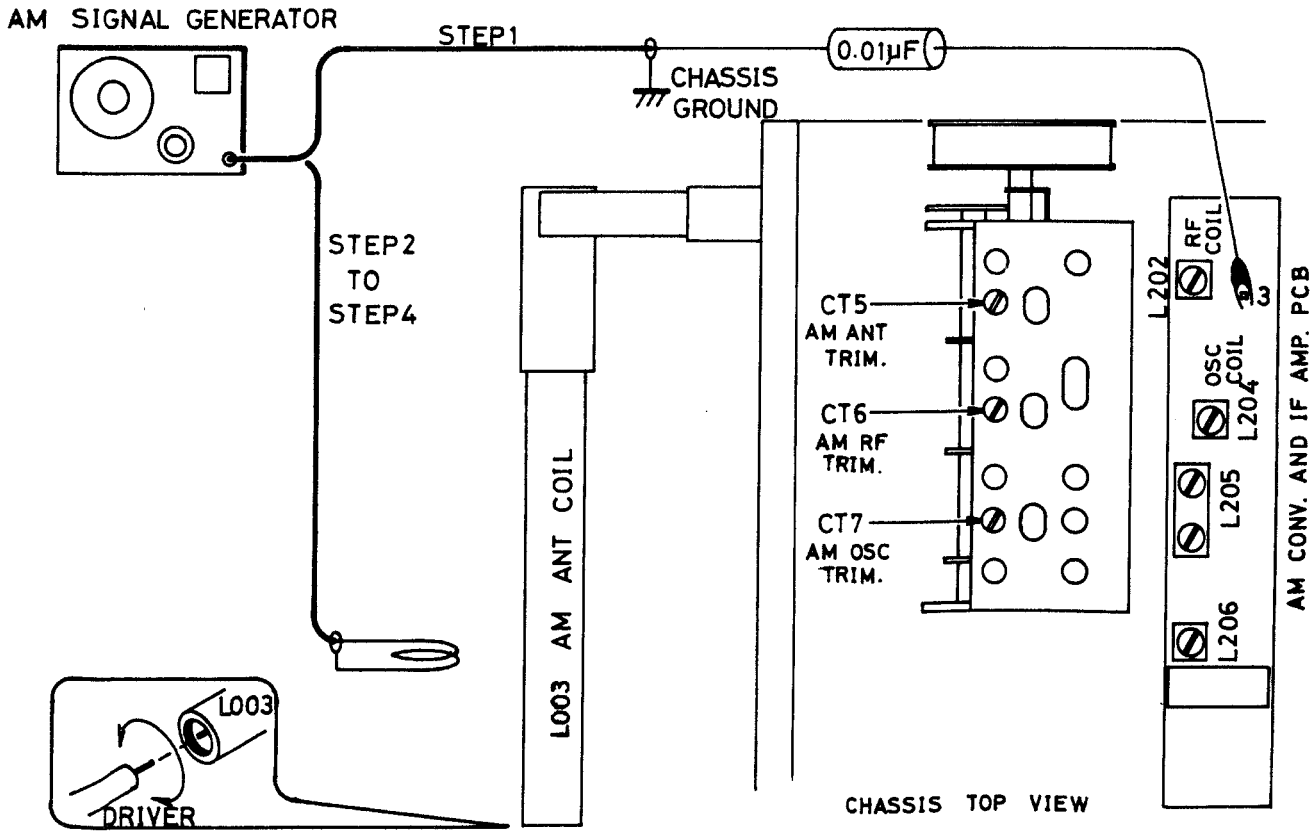


Figure 2. AM Alignment Hook-up

FM IF & RF ALIGNMENT PROCEDURE

Instruments: FM Signal Generator and H.D Analyzer.

- Set Function Selector to FM position.
- Connect FM Signal Generator to FM antenna terminals.
- Connect H.D Analyzer to Monitor-2 OUT jack (Left or Right).

A. FM IF Alignment

1. Set the dial of receiver to the point where no interference appears on band. Adjust IFT L103 (on IF pcb) so that FM tuning meter (M001) indicates the zero point on the center of the scale.
2. Set the frequency of FM Signal Generator at 98MHz (400Hz, 100% Mod.) and feed it to the FM antenna terminals of receiver. Tune receiver to 98MHz and adjust it so that FM tuning meter indicates zero (center) point. Then adjust IFT T1 (on Front-end), so that output level becomes maximum.
3. Next, adjust IFT L102 (on IF pcb) so that reading of H.D Analyzer is minimum. When the indication of FM tuning meter is off from the zero point inspite of the above adjustment, fine adjust L103 so that the FM tuning meter just indicates zero point.

B. FM RF Alignment

Note: Signal strength must be kept -3dB off limiter saturation.

1. Set Signal Generator frequency to 90MHz and also the receiver to 90MHz on the dial scale. Then adjust FM OSC coil L4 (on Front-end) to obtain a maximum reading on level meter of H.D Analyzer.
2. Change the frequency of Signal Generator to 106 MHz, and set the receiver to 106MHz on the dial scale. Then adjust FM OSC trimmer capacitor CT4 (on Front-end) to obtain maximum reading on level meter of H.D Analyzer.
3. Repeat the above steps 1 and 2 until no further improvement is noticed.
4. Set Signal Generator frequency to 90MHz and also the receiver to 90MHz on the dial scale. Then adjust FM ANT and RF coil L1, L2 and L3 (on Front-end) to obtain maximum reading on level meter.
5. Change the frequency of Signal Generator to 106 MHz, and set the receiver to 106MHz on dial scale. Then adjust FM ANT and RF trimmer capacitor CT1, CT2 and CT3 (on Front-end) to obtain maximum reading on level meter.
6. Repeat the above steps 4 and 5 until no further improvement is noticed.

C. Signal Strength Meter Level Adjustment

Set Signal Generator frequency to 98MHz, and set the antenna input level to 1-mV by controlling the ATT of Signal Generator.

Receive the signal from Signal Generator, and adjust the meter coil L104 (on IF pcb) to obtain maximum reading on Signal meter (M002). And then, adjust the potentiometer VR103 (on IF pcb) so that the Signal meter indicates toward "8" on the scale.

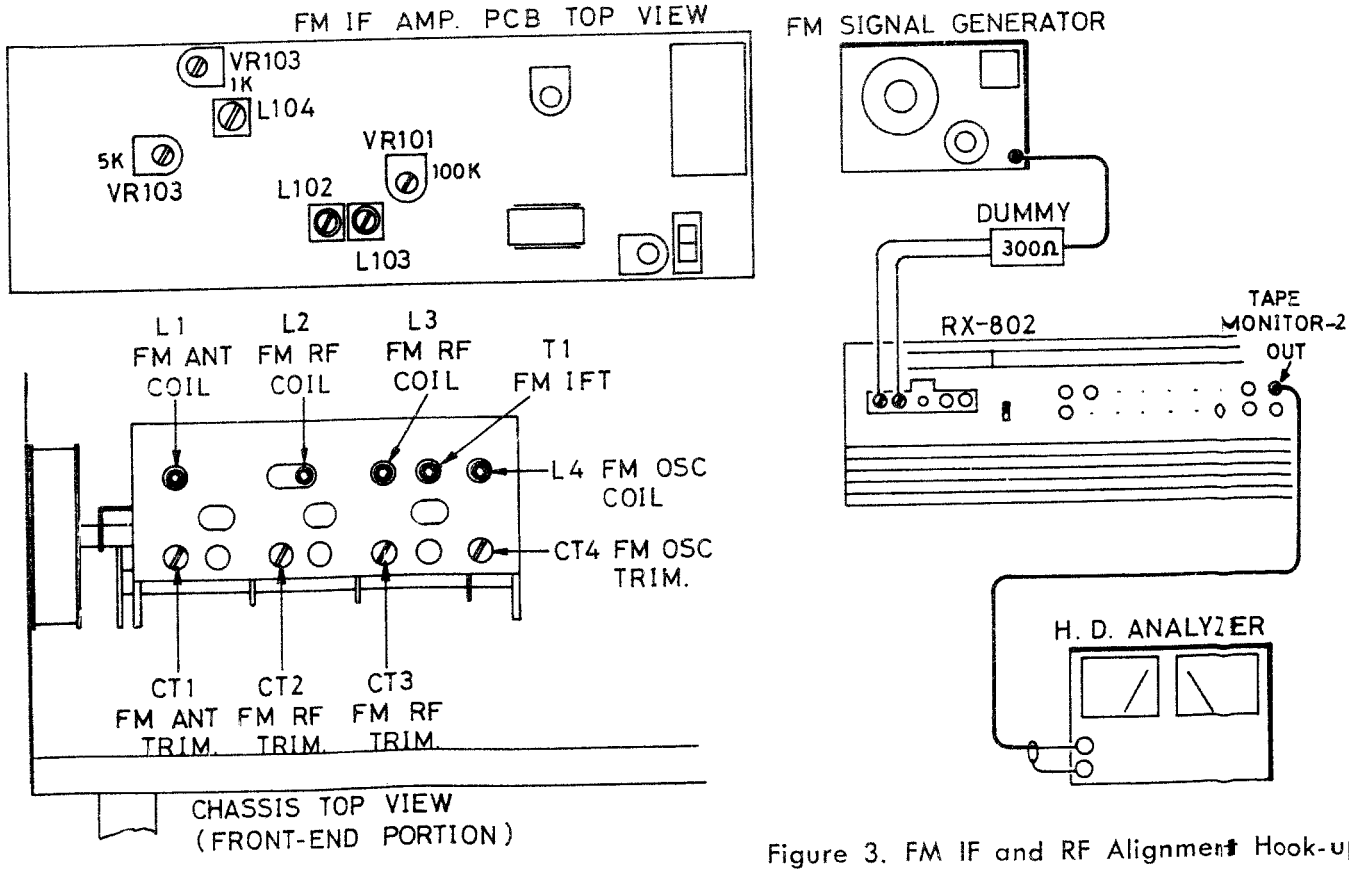


Figure 3. FM IF and RF Alignment Hook-up

FM MPX ALIGNMENT PROCEDURE

Note: The FM IF amplifier alignment must be completed before attempting this MPX alignment. Poor IF alignment will result in poor multiplex adjustment.

Instruments: FM Stereo Generator, AC VTVM and Oscilloscope.

- Set potentiometers VR101, VR301 and VR302 (on IF pcb) to max-clockwise position before starting this procedure.
- Set Function Selector to FM position.
- Connect Stereo Generator to FM antenna terminals, and set the frequency at 98MHz (if a disrupting signal appears, select another frequency).
- FM Stereo Generator modulation is as follows:
  Pilot signal 9%
  Modulation frequency 1KHz (L-ch.) 90%

1. Connect oscilloscope and AC VTVM to Monitor-2 OUT (Right channel) jack. Receiving FM Stereo Generator signal, rotate and set the potentiometer VR301 at the middle of range where the MPX circuit functions in Stereo (STEREO Indicator is lighting all the way). See figure 4.
2. Then rotate and adjust potentiometer VR302 so that the leakage of signal into R-ch. is minimum.
3. Switch the modulation of Stereo Generator from Left to Right, and reconnect oscilloscope and AC VTVM to Monitor-2 OUT (Left channel) jack. Then make certain the level of signal leakage into L-ch. is equal to that into R-ch. in preceding two items. If there is an excessive difference between leak-free effects of both channels, slightly adjust VR302 so that the levels of signal leakage of both channels are equal.
   Separation subsequent to adjustment is as follows:
   32dB and more per 1KHz
   30dB and more per 100Hz
   30dB and more per 10KHz
4. After reducing the modulation of pilot signal of Stereo Generator to zero, increase it gradually and make certain the STEREO indicator lights up when the modulation degree comes to 5%.

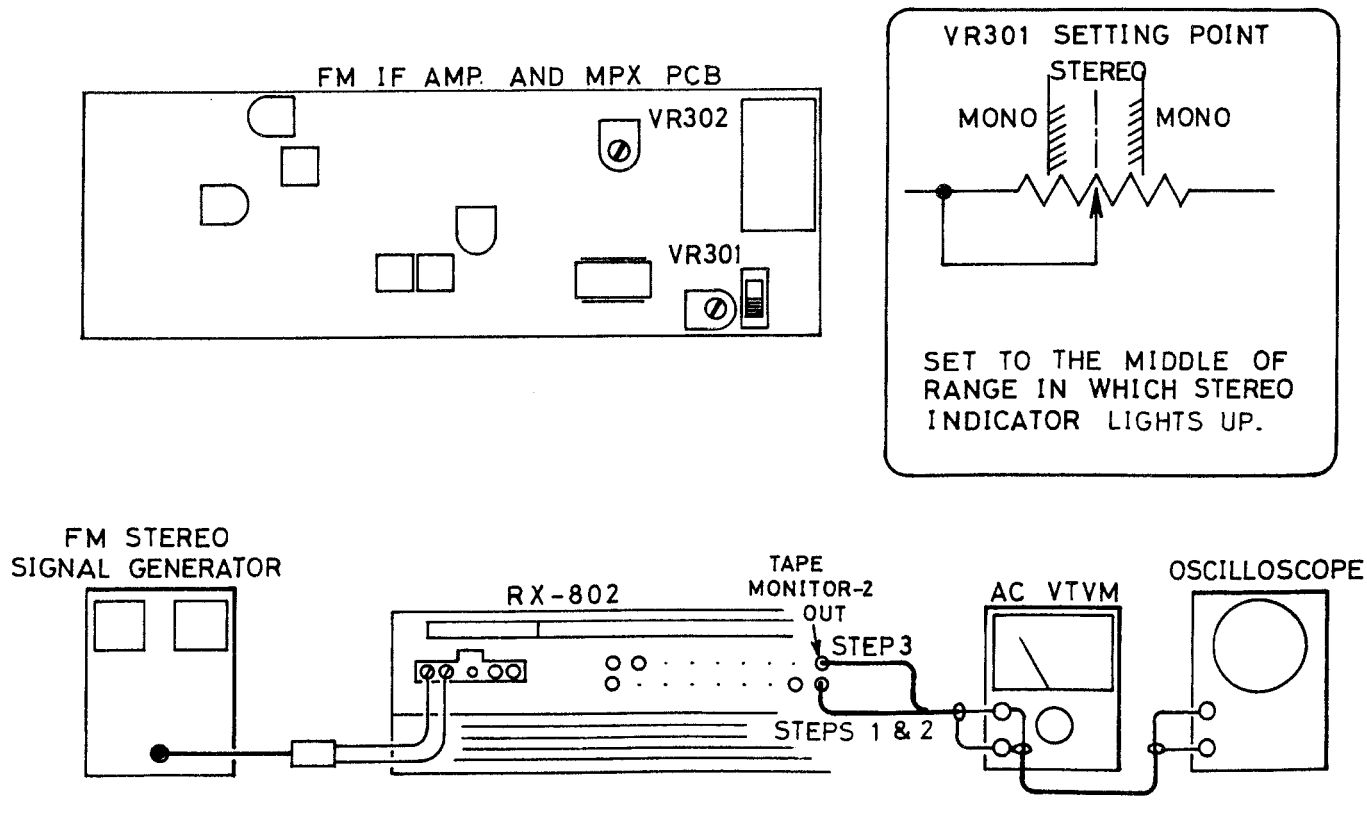


Figure 4. FM MPX Alignment Hook-up

FM MONO-STEREO AUTOMATIC SWITCHING LEVEL ADJUSTMENT PROCEDURE

1. Connect a VTVM and an Oscilloscope to the Monitor-2 OUT jack (Left or Right).
2. Feed the FM signal whose MPX has been varied into the FM antenna terminals.
   MPX Variation
   Pilot signal 9%
   Modulation Frequency 1KHz (L-ch. or R-ch.)
   RF Deviation ±45KHz
3. Set the Frequency at 98MHz (when there is disrupting signal, choose another setting).
4. Set the Function Selector to FM position.
5. Turn the potentiometer VR101 (on IF pcb) fully counterclockwise; this is a condition at which Auto-switching does not function.
6. Adjust the VR101 so that when the antenna input level is 10μV, Stereo will switch in.
7. After adjustment, check to make sure that, indeed, when the antenna input level is below 5μV, Mono will switch in.

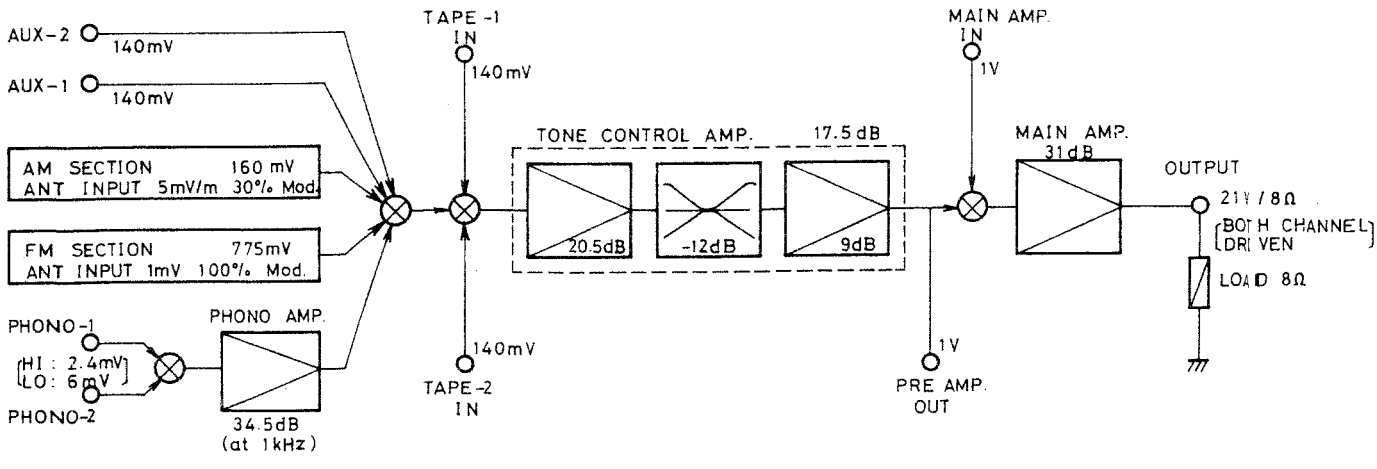
FM MUTING LEVEL ALIGNMENT PROCEDURE

Be sure the FM IF and RF circuits are properly aligned before attempting the FM Muting Level alignment.

Instruments: FM Signal Generator (FMSG) and Oscilloscope (Scope).

1. Set the Function Selector to FM position and FM Muting switch to ON position.
2. Connect FMSG output to FM antenna terminals and Scope to Monitor-2 OUT jack (L-ch. or R-ch.)
3. Set the frequency at 98MHz (when a disrupting signal appears, select another frequency).
4. Turn Potentiometer VR102 (on IF pcb) fully clockwise, then adjust the FMSG attenuator so that the antenna terminal voltage is 10μV.
5. Turn and adjust potentiometer until the signal on scope just vanishes.
6. Check that the signal appears on scope (at distortion less than 1%) when the antenna terminal voltage is set to 20μV, and disappears when the voltage is reduced from 20μV to 10μV.
   a. When there is a high distortion, expedite the FM IF and RF alignment and start again.
   b. When the signal does not vanish at the 10μV input, repeat the steps 4 and 5.

GAIN DIAGRAM



OVERLOAD PROTECTION LEVEL ADJUSTMENT

Instruments: Audio Generator, AC VTVM and Oscilloscope.

- Turn Potentiometers VR901 and 902 (on rectifier pcb) fully counterclockwise before starting this adjustment.

A. The adjustment should be made on each of right and left channels. Connect the vertical input leads of the oscilloscope in parallel with load resistor.
   1. Connect a 4-ohm 100W resistor across Left speaker terminals.
   2. Connect an audio generator and AC VTVM to Left channel AUX-1 input and apply 1,000Hz (sine wave) signal (input level is 200mV), and rotate volume control to max-position.
   3. Turn power switch ON. Gradually rotate the potentiometer VR901 clockwise and adjust it until the waveform on oscilloscope just vanishes. (Protection relay OFF)
   4. Make sure the waveform on oscilloscope does not vanish when volume level is reduced from the above step 3 to the rated output.
   5. Repeat the same steps as above for Right channel.

B. After completing adjustment on each channel, check each channel operation.
   1. Connect a 4-ohm resistor to each output terminal. Connect oscilloscope and AC VTVM in parallel with right or left load resistor.
   2. Apply audio generator signal to right or left input terminal of AUX-1.
   3. Set Mode switch to MONO, and adjust volume control so that output power supply on each channel is 1 Watt (28VRMS). (Balance control is in mid-position.)
   4. Make sure waveform on oscilloscope vanishes (Protection relay OFF) when load resistor on the channel to which oscilloscope is not connected is short-circuited in the above step 3.

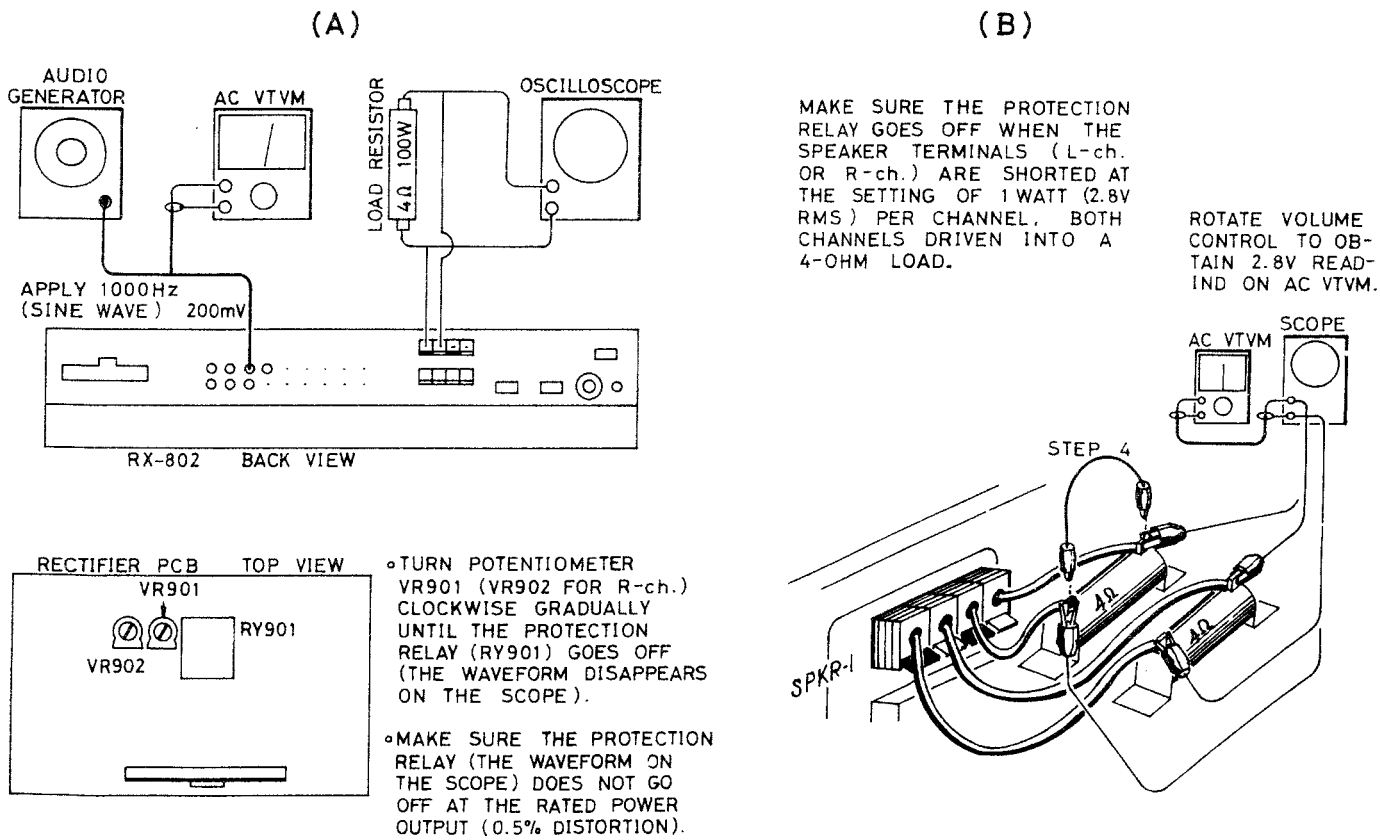

(A)
AUDIO GENERATOR
AC VTVM
LOAD RESISTOR 4Ω 100W
OSCILLOSCOPE
APPLY 1000Hz (SINE WAVE) 200mV
RX-802 BACK VIEW
RECTIFIER PCB TOP VIEW
VR901
RY901
VR902
•TURN POTENTIOMETER VR901 (VR902 FOR R-ch.) CLOCKWISE GRADUALLY UNTIL THE PROTECTION RELAY (RY901) GOES OFF (THE WAVEFORM DISAPPEARS ON THE SCOPE).
•MAKE SURE THE PROTECTION RELAY (THE WAVEFORM ON THE SCOPE) DOES NOT GO OFF AT THE RATED POWER OUTPUT (0.5% DISTORTION).
(B)
MAKE SURE THE PROTECTION RELAY GOES OFF WHEN THE SPEAKER TERMINALS (L-ch. OR R-ch.) ARE SHORTED AT THE SETTING OF 1 WATT (2.8V RMS) PER CHANNEL, BOTH CHANNELS DRIVEN INTO A 4-OHM LOAD.
ROTATE VOLUME CONTROL TO OBTAIN 2.8V READIND ON AC VTVM.
AC VTVM
SCOPE
STEP 4
4Ω
4Ω
SPKR-1

Figure 5. Overload Protection Adjustment Hook-up

TROUBLE SHOOTING

Unit inoperative

1. If the pilot lamp does not light, check the flow at the AC Outlet (Switched) and
   A. If no voltage across,
      1. The AC cord may be faulty, or
      2. Connections in the Power Switch may be faulty.
   B. If there is proper voltage across, check the AC fuse F001, and if the AC fuse is blown,
      1. Primary or Secondary winding of Power Transformer T001 may be shorted out, or
      2. Rectifier D905, 906, 907, 908 or 909 may be faulty, or
      3. Capacitor, C907, 908, 909, 911, 912, 913, 914, 002 or 003 may be faulty, or
      4. Transistor, Q609, 610, 611, 612, 001, 002, 003 or 004 may be shorted out.

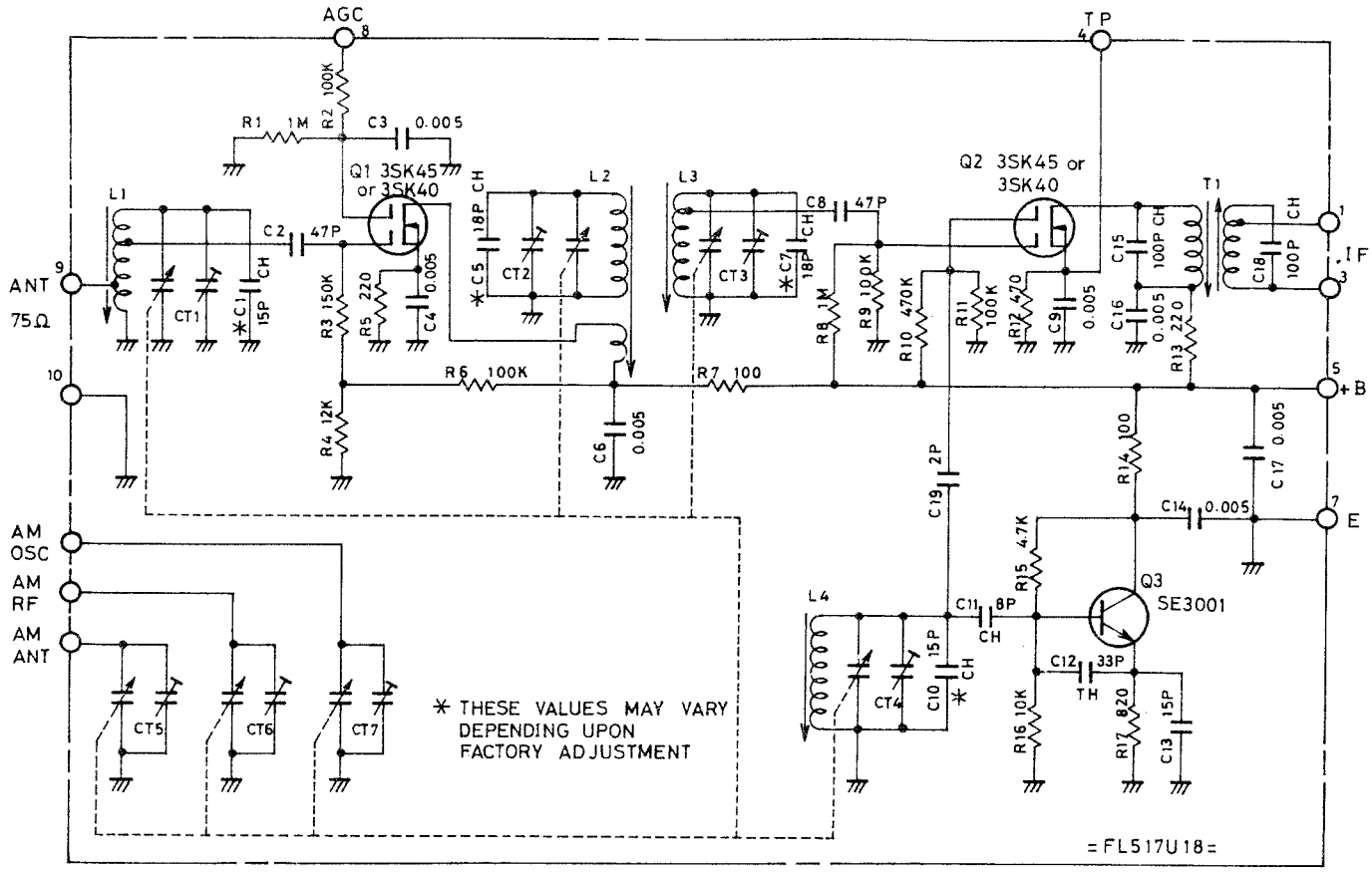
II. If the pilot lamp does light, check to see if the Protector Relay operates properly.
   A. If the Relay does not operate,
      1. Output Circuits may be shorted out, or
      2. Transistor, Q902, 904 or 905 may be faulty, or
      3. Relay coil may be opened.
   B. If the Relay operates properly, check to see if there is a signal at Main Amp. pcb Pin 1 (Pin 2 for R-ch.)
      1. If there is a signal,
         a. Capacitor C601(C602 for R-ch.) may be faulty, or
         b. Transistor Q601 or 603 (Q602 or 604) may be faulty, or
         c. Protector Relay (contact point) may be faulty.
      2. If there is no signal,
         a. Capacitor C505, 516, 526, 532, 536, 544, 546 or 548 (C506, 517, 527, 533, 537, 545, 547 or 549) may be faulty, or
         b. Transistor Q501, 503, 505, 507 or 509 (Q502, 504, 506, 508 or 510) may be faulty, or
         c. Unit-Separate Switch may be faulty.

Radio Section Inoperative

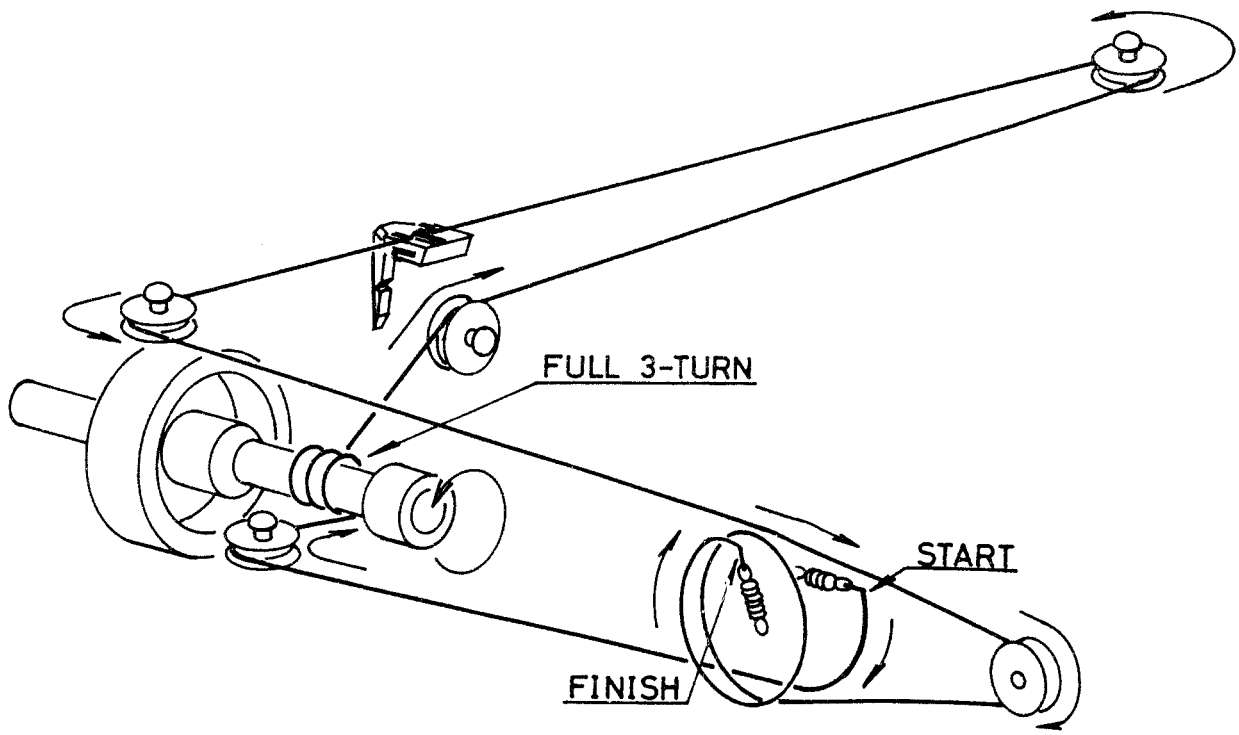
I. AM is inoperative
   A. If there is proper voltage at AM IF pcb Pin b1,
      1. Transistor Q201, 202, 203, 204 or 205 may be faulty, or
      2. Coil L202, 204, 205, 206, 207 or 003 may be faulty.

II. FM is inoperative
   A. If there is proper voltage at FM IF pcb Pin B1 and b1.
      1. Transistor Q101 may be faulty, or
      2. IC101, 102 or 301 may be faulty, or
      3. FM IFT L102 or 103 may be faulty, or
      4. Front-end may be faulty.
   B. If the unit only receives in mono at FM Stereo broadcast,
      1. IC301 may be faulty, or
      2. Stereo Auto-switching circuit may be faulty.

FRONT-END SCHEMATIC DIAGRAM



DIAL STRINGING DIAGRAM



ADDENDUM

Following changes are applied to the units marked with "1052" at the rear panel (serial numbers subsequent to Ⓖ53881 or Ⓛ61751).

1. Specification of Front-end is changed: FM reception range is set from 87.4MHz to 109MHz.
   ▽: to standardize specification to FTZ
   △: model No. and part No. of new front-end are:
   model No. – FL524U13
   Part No. – 321304379
   With the alteration of reception range which also means the change in dial calibration, dial scale board is changed. Part No. of new dial scale board – 112011289
2. Specification of variable resistor for volume control is changed, e.g., curves of 3rd stage (VR501C) and 4th stage (VR501d) viewed from the shaft side are changed from CT to BT, and 5th stage (VR501e) and 6th stage (VR501f) from B to C.
   ▽: to improve input overload characteristic.
   △: Part No. of new variable resistor for volume control – 525121128
   Accordingly loudness circuit is also changed.
   a. values of R503 and R504 to 27kΩ(J) ¼W, Part No. 552027322
   b. values of C501 and C502 to 500PF (K) 250V, Part No. 440501188
3. Due to small alterations in specification of signal meter, the values of R138 is changed to 680Ω (Part No. 552068122).
4. Transistor Q107 in FM IF circuit is changed to 2SC828 (R) (Part No. 301201115). Also, R145 is changed to 4.7kΩ(J) ¼W (Part No. 552047222).
   ▽: to improve FM muting operation.
   △: With the alteration of value of R145, electrode voltage at Q108 and Q109 are changed as follows:
   a. Q108 V_B–1V, V_C–0.35V, V_E–0.33V
   b. Q109 V_B–0.28V, V_C–5V(Mut. ON) V_E–0.33V
   Note: If replacing with the new Front-end or the variable resistor to the units with serial numbers of Ⓖ53850 and before or Ⓛ61750 and before (not marked with "1052" etc. at the rear panel), alteration of dial scale board and values in circuits is necessary. So, it is recommended to ask for correct matching parts when replacements are required.

REPAIR PARTS LIST

Schematic Location	Part No.	Description
COILS and TRANSFORMERS		
L101,901, L001	220001121	RF Choke, 47μH
L102	225501125	FM IFT, Ratio (Pri.)
L103	225501126	FM IFT, Ratio (Sec.)
L104	226501122	Muting Coil, 10.7MHz
L201,203	220001122	RF Choke, 2μH
L202	226501112	AM RF Coil
L204	223301123	AM OSC Coil
L205	229101129	AM IFT, 1st
L206	225301124	AM IFT, 2nd
L207	228641115	AM Whistle Filter
L301	228641118	Low Pass Filter, FM MPX
L002	226501121	FM ANT Matching Transformer
L003	222391123	AM Antenna Coil Assembly
T001	205001374	Power Supply Transformer (Multi-voltage)
	202001378	Power Supply Transformer (220V only)*1

Schematic Location	Part No.	Description
TRANSISTORS, DIODES and IC'S		
Q101,102, Q103,104, Q105,106, Q107,201, Q202,203, Q204	301201117	2SC829(C), FM IF Amp., FM Muting Amp., AM Conv., AM IF Amp., etc.
Q108,109, Q301,302, Q303,304, Q205,503, Q504,505, Q506,507, Q508,509, Q510	301201115	2SC828(R), AM Audio Amp, FM Muting, FM Audio Amp., Tone Amp., etc.
Q401,402	301201147	2SC1328, Phono Amp.
Q501,502	301201114	2SC644(S), Tone Amp. 1st stage

Schematic Location	Part No.	Description
Q601,602, Q603,604, Q904,905	301001117	2SA564A (P or Q), Differential Amp., etc.
Q605,606	301201137	2SC983 (Y), Pre-driver
Q607,608	301201132	2SC1384, Bias Compensator
Q609,610, Q901	301201153	2SC1567 (P or Q), Driver, Relay Gate
Q608,611	301001131	2SA794 (P or Q), Driver
Q902	301201134	2SC1327, Relay Gate
Q903	301201142	2SC789 (Y), Stabilizer
Q001,002, Q003,004	301301125	2SD370, Power Amp.
D101,102, D103,104 D105,106, D108,109, D201,202	300111008	1K188, FM AGC, FM Muting, FM Det., etc.
D107,601, D602	300212002	KB-265, Bias Compensator
D110,111	300212004	KB-269, FM Muting Bias
D901	300313004	BZ-120, Zener Regulator, 12V
D902	300313015	BZ-340, Zener Regulator, 34V
D903,904, D905	300919016	SM-1-08, Rectifier for Preamp. & Radio Sec., Overload Protector Bias
D906,907, D908,909	300919020	ED03-02, Rectifier for Main Amp.
IC101,102	303452146	TA7061 AP, FM IF Amp.
IC301	303452151	HA-1156, MPX Decoder
IC401,402	303452150	BA-312, Phono Amp.

VARIABLE RESISTORS

VR101	510502130	100KB, FM Stereo Auto-Switching Level Adj.
VR102	510502131	1KB, FM Muting Level Adj.
VR103,301, VR302,601, VR602	510502128	5KB, FM Signal Meter Level Adj., etc.
VR501	525121126	100K (MN + CTx2 + Bx2), Balance & Volume Control *2
VR502,503	525101130	50KBx2, Bass and Treble
VR901,902	510502126	10KB, Overload Protector Level Adj.

MISCELLANEOUS

M001	231310029	Meter, FM Tuning
M002	231310027	Meter, Signal Strength
	321304377	AM/FM Front-end *3

Schematic Location	Part No.	Description
S1	614010117	Switch, Power Supply
S2	601011264	Switch, Speakers
S3,6	613000022	Switch, Unit-Separate, Phono Sensitivity
S4	601011262	Switch, Monitor
S5	601011267	Switch, Function Selector
S7,8,9,10 (1 set)	614040814	Switch, Muting Tone Defeat, etc.
S11,12,13 S14,(1 set)	614040815	Switch, Loudness, Mode, etc.
S15	613000024	Switch, De-emphasis
X101,102	229101134	Bandpass Filter, FM IF, 10.7MHz
PL001,002, PL004,005, PL006,007	351080015	Lamp. 8V, 0.15A. Func. Indicator
PL003,008, PL009,010, PL011,012, PL013	352063025	Lamp, 6.3V, 0.25A, Dial Light, etc.
PL014	351140005	Lamp, 14V, 50mA, FM Stereo Indicator
RY901	240111221	Relay, Overload Protector
	141210151	FM IF Amp. & MPX Dec. Circuit Assembly
	141110144	AM Conv. & IF amp. Circuit Assembly
	141510149	Phono Equalizer Amp. Circuit Assembly
	141710259	Tone Control Amp. Circuit Assembly
	141710260	Volume Control Circuit Assembly *4
	141610264	Main Amp. Circuit Assembly
	141810606	Rectifier & Protector Circuit Assembly

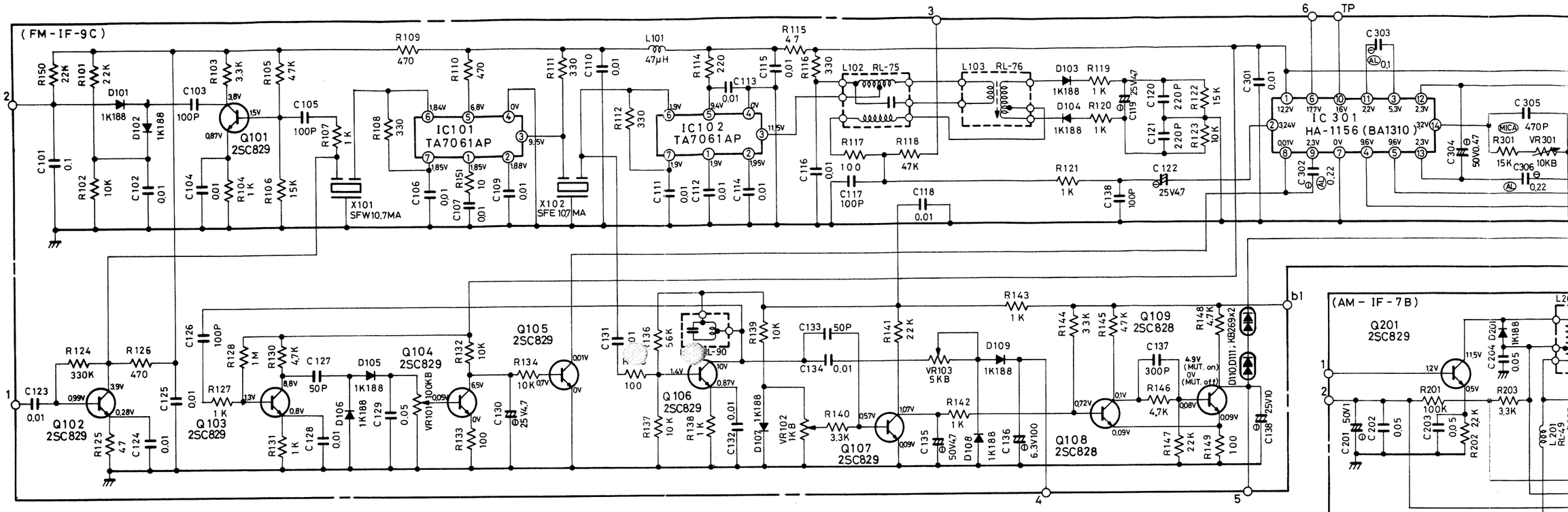
*1 SEMKO Approved Type

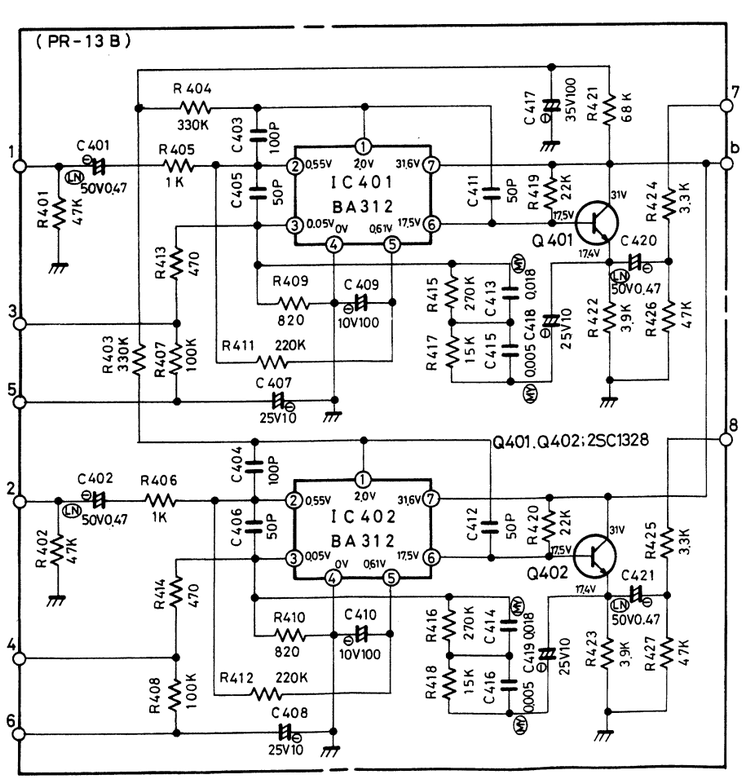
*2 For variable resistor of units marked with "1052" etc. near the serial number at the rear of the units a different value is used. (Part No. 525121128)

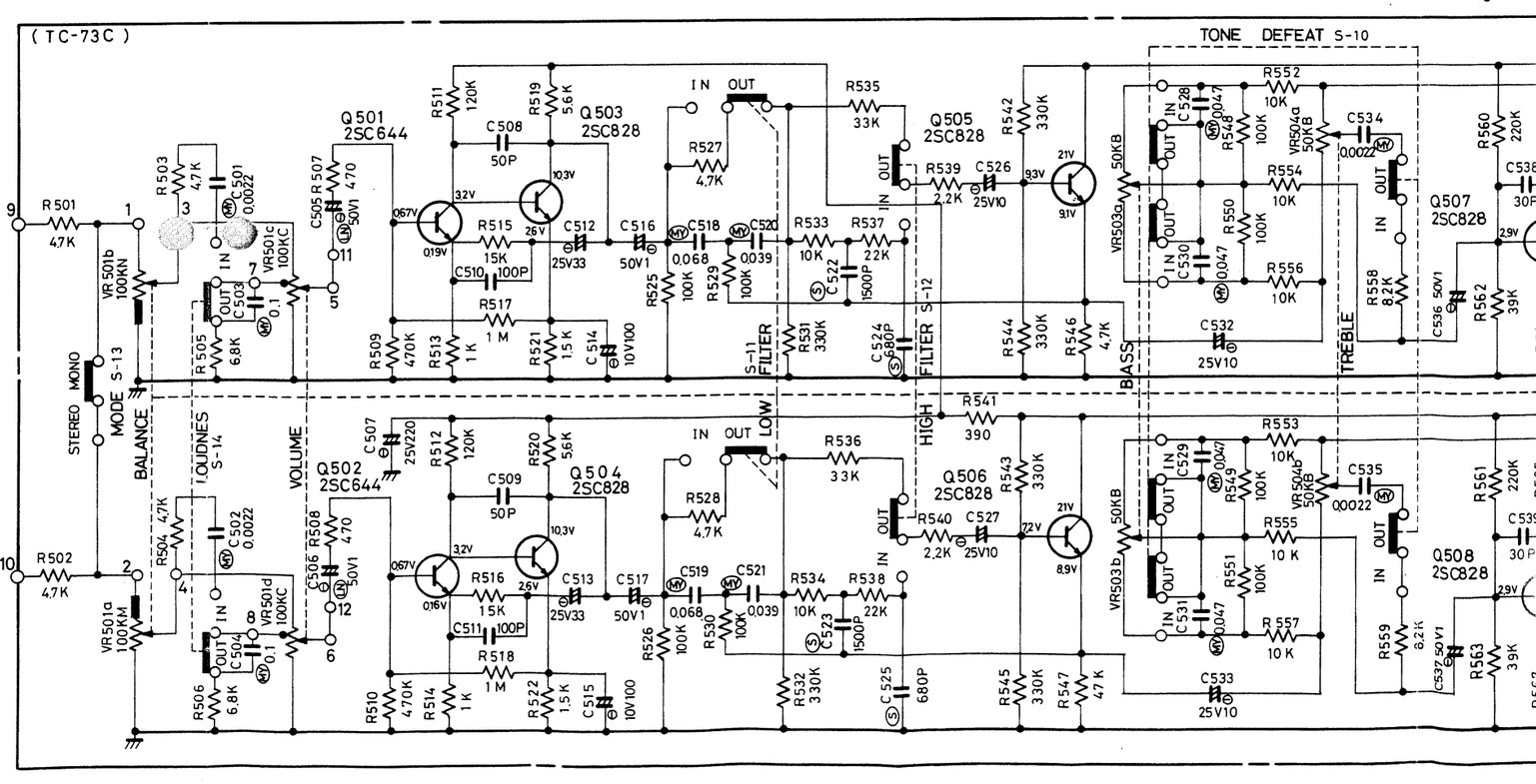
*3 For AM/FM Front-end marked with "1052" etc. near the serial number at the rear of the body, a different scale is used. (Part No. 321304379)

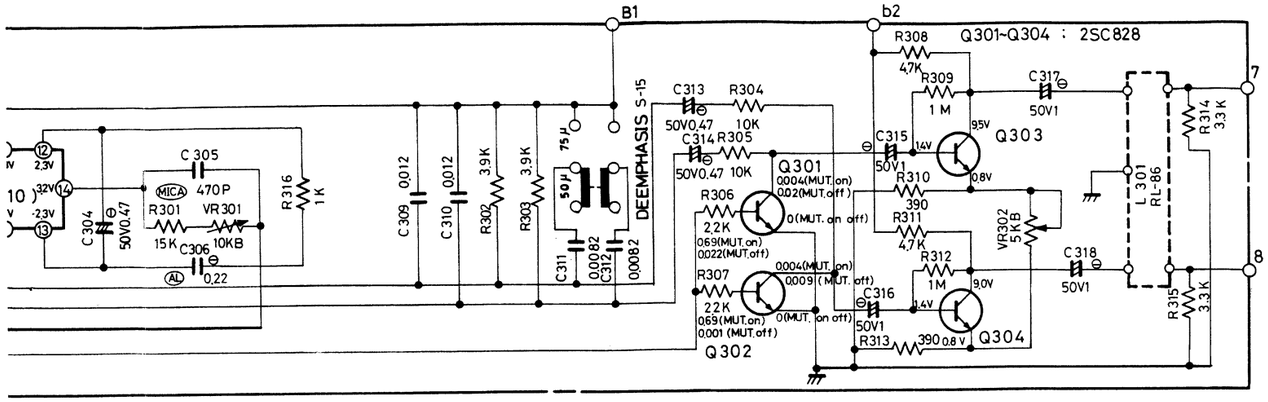
*4 The marking of pcb of Volume Control Circuit Assembly is changed from TC-73B to TC-75 for units with serial numbers subsequent to Ⓖ53880 or Ⓛ61381, in order to prevent confusion with the pcb of Tone Control Circuit Assembly of which marking is also TC-73B.

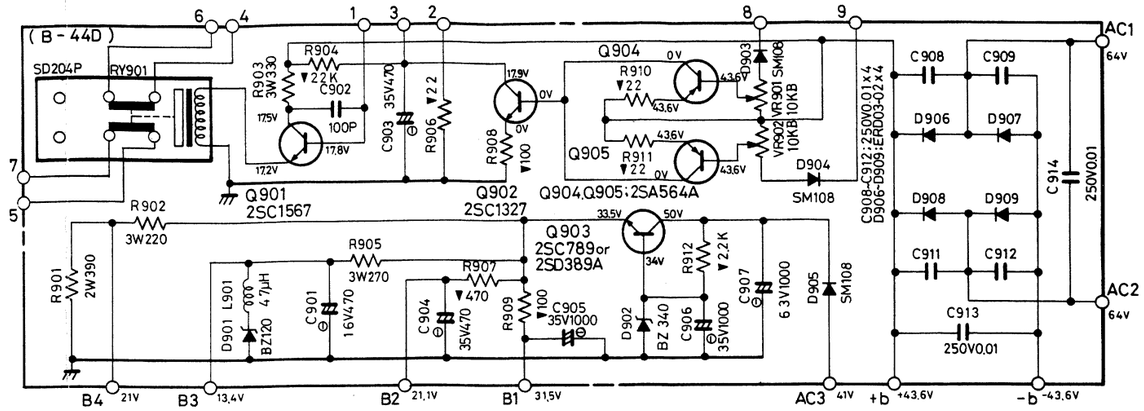
SCHEMATIC DIAGRAM RX-802

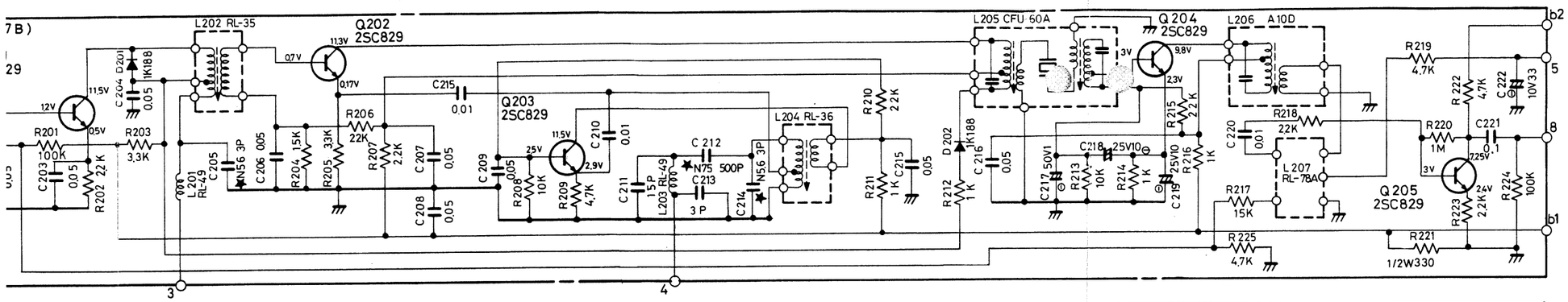


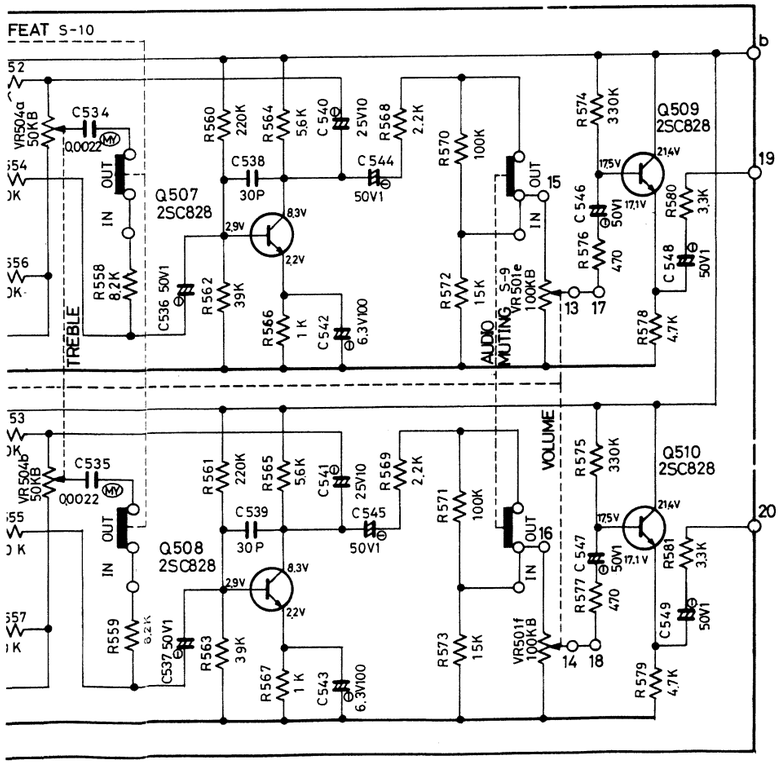


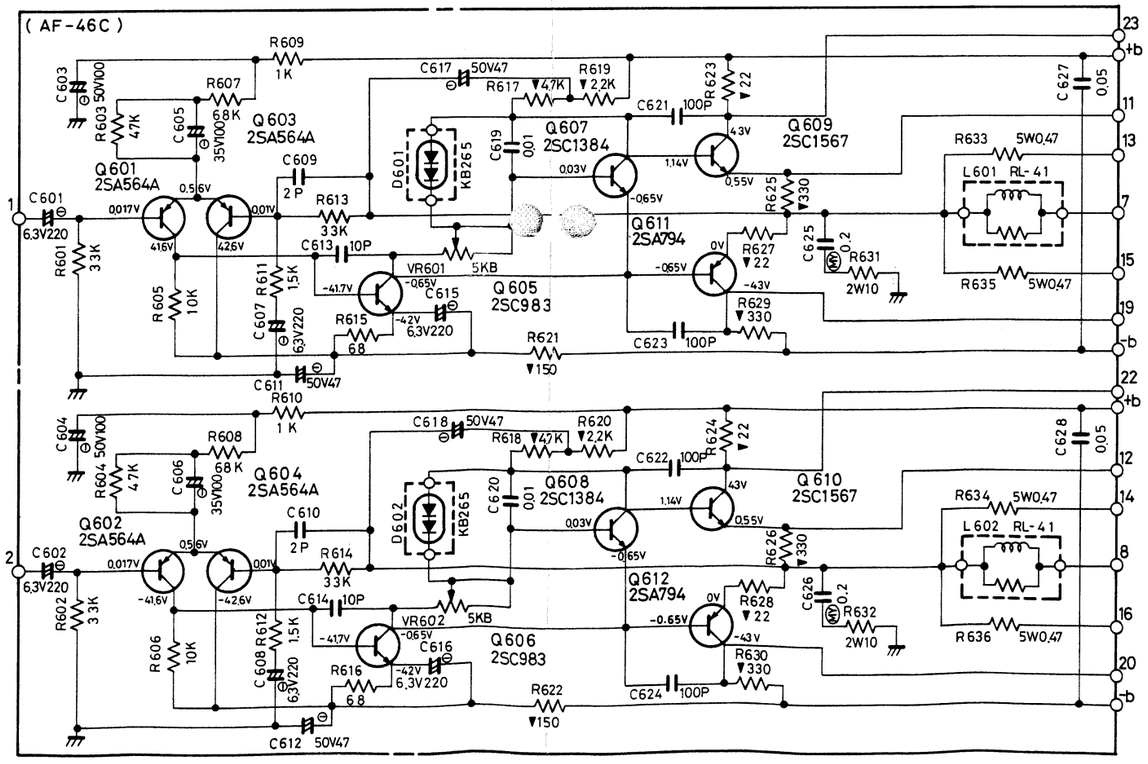












I T E M	SCHEMATIC LOCATION (LAST)	
FM IF AMP	R 1 5 1	C 1 3 8
AM CONV. & IF AMP	R 2 2 5	C 2 2 2
FM MPX DECODER	R 3 1 6	C 3 1 8
EQUALIZER AMP	R 4 2 7	C 4 2 1
TONE CONTROL	R 5 8 1	C 5 4 9
MAIN AMP	R 6 3 6	R 6 2 8
POWER SUPPLY	R 9 1 2	C 9 1 3
CHASSIS	R 0 0 6	C 0 0 3

(RESISTORS)

5% TOLERANCE UNLESS OTHERWISE NOTED
K --- KILO OHM
M --- MEGA OHM
▼ --- COMPOSITION RESISTORS 1/2 WATT
NON MARK --- LOW NOISE TYPE CARBON RESISTORS 1/4 WATT

(CAPACITORS)

(MY) --- MYLAR FILM CAPACITORS
(AL) --- ALSICON CAPACITORS
(S) --- POLYSTYRENE FILM CAPACITORS
(LN) --- LOW NOISE TYPE CAPACITORS
⊣⊢ --- ELECTROLYTIC CAPACITORS
★ --- TEMPERATURE COEFFICIENT CAPACITORS
NON MARK = CERAMIC CAPACITORS
UNLESS OTHERWISE NOTED IN SCHEMATIC, ALL CAPACITANCE VALUES ARE EXPRESSED IN MFD

- VOLTAGE READING WITH VTVM FROM THE POINT SHOWN TO THE CHASSIS GROUND (LINE VOLTAGE 120 VOLT)
- VOLTAGE READING MAY VARY ± 20 %.

AM/FM FRONT END
(FL517U18)

M001
TUNING

STEREO LAMP
PL014
14V50mA

B4

FMB

B2

TP

B1

b2

FM IF AMPLIFIER AND FM MPX DECODER
(FM-IF-9C)

AGC

C001 0.01
L001 47 μH
B3

RL-85A
L003
WHITE
RED
GREEN
BLACK
YELLOW

ANTENNA
FM 300Ω
75Ω
GND
AM

L002
RL-92

S-8
FM MUTING
ON OFF

FUNC-1R
S-5b

M002
SIGNAL

AM
(AM

FUNC-6R
S-5m

(LEFT)
PHONO-1
PHONO-2
AUX-1
AUX-2
IN TAPE MONITOR-1 OUT
IN TAPE MONITOR-2 OUT

FUNC-6F
S-5k

EQUALIZER AMPLIFIER
(PR-13B)

LOW HIGH
S-6
HIGH LOW

FUNC-4F
S-5g

FUNC-4R
S-5h

FUNC-2F
S-5c

FUNC-2R
S-5d

FUNC-5F
S-5i

FUNC-5R
S-5j

FUNC-3F
S-5e

FUNC-3R
S-5f

MONITOR-1R
S-4b

MONITOR-1F
S-4a

MONITOR-2R
S-4d

MONITOR-2F
S-4c

(RIGHT)
PHONO-1
PHONO-2
AUX-1
AUX-2
IN TAPE MONITOR-1 OUT
IN TAPE MONITOR-2 OUT

FUNC-6F
S-5l

TONE CONT
(TC-73C)

AM CONV. AND IF AMPLIFIER
(AM - IF - 7B)

b2 B 3
5
8 M
b1 AMb1

3 4

(IND. LAMP) PL001, PL002 8V150mA x2. (TUN. METER LAMP) PL003 6,3V250mA. (IND. LAMP) PL004~PL007 8V150mA x 4.

PHONO 1 PHONO 2 FM AM AUX 1 AUX 2

FUNC - 1F
S-5a

(DIAL LAMP)
PL008-PL012
6,3V250mA x 5

AMb1 FMB1 B 3

PL013
6,3V250mA
(SIG. METER LAMP)

B 2

TONE CONTROL AMPLIFIER
(TC - 73C)

b
19
20
PRE AMP OUT (LEFT)
PRE AMP OUT (RIGHT)
MAIN AMP IN
MAIN AMP IN
1
2
UNITE
S - 3
SEPARATE

MAIN AMPLIFIER
(AF - 46C)

T001
(T-040C)
POWER TRANSFORMER
VIOLET
BLUE
GREEN
BROWN
BLUE
WHITE
ORANGE
RED
YELLOW
PINK
BLACK
YELLOW
RED

DIM BRIGHT
DIMMER
S-7

POWER AC
100 120V
220 240V

R006
2,2M
OFF ON

J001 UNSWITCHED
J002 SWITCHED
J003

F001
AC FUSE
100 120V 3A
220 240V 1,5A

220V 240V
120V 117V

OFF ON
POWER SW.
S-1

ON OFF

POWER SUPPLY

AC1
AC2
AC3
+b -b

B4 B3 B2 B1
B 4 B 3 B 2 B 1
20V 12V 25V 34V

S T

SPEAKER SW. 1F
S-2a

SPEAKER SW. 1R
S-2b

SPEAKER SW. 2FR
S-2c

LEFT RIGHT SPEAKER-1

LEFT RIGHT SPEAKER-2

R001 2W330
R002 2W330
J004 PHONES

R003 10W22

−B +B
C002 50V6800
C003 50V6800
R004 5,6K
R005 5,6K

+b
11 0.5V 0V
Q 001 2SD370
+B1

13 7
15 0V
19 -43V -43,6V
Q 002 2SD370
−B1

-b
22
+b
12 0.5V 0V
Q.003 2SD370
+B2

14 8
16 0V
-43 V
20
Q004 2SD370
-43,6V
−B2
-b

SPEAKERS
OFF 1 2 1+2 SPEAKER 4 cH

MONITOR
SOURCE
1-2 1 2 2-1

FUNCTION
AM FM
PHONO 1 AUX 1
PHONO 2 AUX 2

(BOTTOM VIEW)
2SC644
2SC828
2SC829
2SA564A
2SC1384
2SC1327

(BOTTOM VIEW)
EC961
2SD370

(TOP VIEW)
2SC789
B C E

(TOP VIEW)
14 13 12 11 10 9 8
1 2 3 4 5 6 7
LA1201
BA1310
HA11564A

(SIDE VIEW)
BA312
1 2 3 4 5 6 7

(TOP VIEW)
2SC1567
2SA 794
E C B

2SC983
E C B